Roll with the Changes: The Continuous Improvement of the Off-campus Engineering Technology Curriculum at Western Carolina University

Abstract – In response to a rapidly changing economic landscape in Western North Carolina, Western Carolina University has taken steps to insure the delivery of a quality baccalaureate engineering technology program at locations other that the home campus. This paper will provide a brief overview of the evolution and delivery of the current off-campus Engineering Technology curriculum at Western Carolina University. Program curricula will be presented along with a description of successes and opportunities for the future.

The economic landscape of Western North Carolina is changing. That change, largely due to the globalization of manufacturing and an increased migration of retirees to the area, has significantly impacted continuing engineering education in Western North Carolina. In 2002, North Carolina had the third highest unemployment rate in the country and 50,500 fewer people were employed in manufacturing than in 2000 due to plant closings and layoffs, a problem reported as "near crises proportion [1]." In that same year, the total employment in North Carolina decreased by 91,100 jobs [2]. Many counties in Western North Carolina had not experienced such dire economic conditions since the Great Depression [3]. Job loss has continued and the current unemployment rate for the 25 counties in Western North Carolina ranges from 3.67% to 9.0% [4]. With the move toward more global manufacturing, industries such as heavy metals and furniture have left the area for their new homes overseas. What remains, is a competent workforce and uncertain job opportunities. Many workers in the region are under educated for the remaining jobs, and unprepared for new opportunities in higher technology fields. The challenge for Western Carolina University is how to prepare the technical workforce for future opportunities.

Since a major component of the off-campus curriculum is a two-year degree in an engineering technology, establishing partnerships with community and technical colleges is integral to the success of the curriculum. Community college representatives sit side-by-side with industry representatives on our industrial advisory committee, and participate in the dialog on how to better prepare the workforce for the next decade and beyond. As a result of input from the advisory committee, it was determined that a change of emphasis was needed for the off-campus curriculum.

The current off-site concentration in Engineering Technology enables place-bound individuals employed in business, industry and government-related occupations to pursue their four-year degree through part-time evening study. This concentration combines the benefits of the established on-site Engineering Technology curriculum, with the convenience of locations near the students' homes. Instructional delivery is primarily through face-to-face classes supplemented by online components and interactive video. The intent of the concentration is to provide an appropriate educational experience that will qualify graduates for career advancement. Western Carolina currently has three off-campus locations in North Carolina for its Engineering Technology distance program, including Asheville, Spindale, and Hickory/Morganton. Incidentally, these locations have been particularly hard-hit by the recent economic downturn.

In the past, every effort was made to keep the on-campus and off-campus programs completely aligned. However, based upon the off-campus advisory committee's comments, the programs' missions were very different. The on-campus curriculum serves mainly traditional 18-22 year old students who have little experience in the field. The off-campus curriculum serves a non-traditional student population with an average age of 35, and experience in the field of engineering technology. Since the Engineering Technology curriculum was scheduled for reaccredidation in 2008, it seemed to be the optimum time to implement the suggested changes in emphasis. It was determined that the on-campus curriculum would pursue reaccredidation in 2008, and the off-campus would implement changes, and seek reaccredidation in three years.

The updated distance curriculum, appropriately named *Engineering Technology: Engineering and Technical Operations,* will begin in the fall of 2008. It requires a total of 124 semester hours of study, including the university's 42-hour liberal study component, math and science program requirements, and 45 hours of upper and lower level engineering technology classes. Specific curriculum requirements are:

Liberal Studies	(44 hours)
Engineering Technology Program Requirements	(8 hours)
Engineering Technology Lower Level Core	(12 hours)
Engineering Technology Upper Level Core	(27 hours)
Engineering Technology Electives	(6 hours)
Transferred Engineering Technology Electives	(27 hours)
Total	(124 hours)

In response to significant changes in Western North Carolina's economy on recent years, Western's commitment to industry and its workforce has never been stronger. The off-campus Engineering Technology program has doubled its enrollment in the last three years, indicating success, but also creating certain challenges. Successes include a high-quality, face-to-face, curriculum taught by highly qualified tenured/tenure-track professors. Continued success of the program is also attributed to excellent community college partners who are committed to the success of their graduates. Another factor in the success of the off-campus program is its low cost and high value. It is hoped that the latest changes in the off-campus program will continue to provide the same quality curriculum to place-bound learners in Western North Carolina

References

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